

# Notice of Allowability

Application No.

10/642,376

Examiner

Navneet K. Ahluwalia

Applicant(s)

KUCHINSKY ET AL.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/29/2006.
2. ☒ The allowed claim(s) is/are 1,4-12,16-20,23-48,50-64,67-75 (Renumbered 1 - 65).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 09252006.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
MOHAMMAD ALI  
PRIMARY EXAMINER

### DETAILED ACTION

1. This communication is in response to amendment filed on 08/29/2006.
2. After a further search and a thorough examination of the present application in view of the proposed amendments and in light of the prior art of records, claims 1, 4 – 12, 16 – 20, 23 – 48, 50 – 64, 67 – 75 are allowed.
3. Claims 2 – 3, 13 – 15, 21 – 22, 49 and 65 – 66 are cancelled without prejudice.

### EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney, Alan W. Cannon for Mike Beck, Registration No. 34,977 on September 21, 2006.

5. Please amend the claims which was filed on 08/29/2006 as follows:

1. (Currently Amended) A tool providing interactive capabilities for user involvement in extracting and disambiguating biological information in text, said tool comprising:

- a text viewer into which at least a portion of a textual document is importable and viewable, said text viewer including a display on which said at least a portion of the text document is viewable;

means for text mining the at least a portion of a textual document having been imported into the text viewer to extract nouns and verbs therefrom;

a list-based text editor that lists nouns and verbs extracted by said means for text mining as entities and interactions; and

means for assigning directionality to the listed interactions;

means for converting the extracted nouns and verbs into a local format representation as the entities and interactions; and

means for generating, displaying and interactively manipulating a biological diagram, based upon the entities and interactions represented in said local format.

Claim 2 – (Canceled)

Claim 3 – (Canceled)

4. (Original) The tool of claim 1, wherein each said entity and interaction listed points back to a location of the portion of the textual document where it was identified.

5. (Original) The tool of claim 1, wherein said means for assigning includes slots associated with each said interaction, to which a user can identify one or more of said entities involved in the interaction, and assign roles of each said entity played in the interaction.

6. (Original) The tool of claim 5, wherein said roles comprise affecters, affected and unassigned.

7. (Original) The tool of claim 6, wherein said roles further comprise mediator and unknown.

8. (Original) The tool of claim 1, further comprising a user context, wherein said means for text mining text mines based upon contents of said user context.

9. (Original) The tool of claim 8, wherein said user context comprises at least one entity or interaction.

10. (Original) The tool of claim 8, further comprising means for managing said user context, wherein said means for managing permits editing of an existing user context, as well as creation of a new user context.

11. (Original) The tool of claim 10, wherein said means for managing allows selection of specific entities and interactions to be added to said user context.

12. (Original) The tool of claim 10, wherein said means for managing allows direct inputting of entities and interactions into said user context.

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Currently Amended) The tool of claim 10 ~~13~~, wherein said means for managing facilitates selection of local format representations of entities and interactions, and entering said local format representations into said user context.

17. (Currently Amended) The tool of claim 1 ~~3~~, further comprising a user context, wherein said means for text mining text mines based upon contents of said user context; and

means for managing said user context, wherein said means for managing permits editing of an existing user context, as well as creation of a new user context, and wherein said means for managing facilitates selection of local format

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representations of entities and interactions generated from said manipulation of a biological diagram.

18. (Original) The tool of claim 8, further comprising means for managing aliases, wherein said means for managing aliases equates multiple names for the same entity, enabling said tool to identify each said entity by multiple names as they occur in the textual documents.

19. (Original) The tool of claim 18, further comprising means for resolving errors in alias management.

20. (Currently Amended) A tool providing interactive capabilities for user involvement in extracting and disambiguating biological information in text, said tool comprising:

a text viewer into which at least a portion of a textual document is importable and viewable, said text viewer including a display on which said at least a portion of the text document is viewable;

means for text mining the at least a portion of a textual document having been imported into the text viewer to extract nouns and verbs therefrom;

a list-based text editor that lists nouns and verbs extracted by said means for text mining as entities and interactions;

a canvas area for diagrammatically representing said entities and interactions;  
and

means for populating diagrammatic renderings on said canvas with one or more of said entities and interactions identified by said means for text mining;

means for representing said entities and interactions in a local format; and  
means for generating, displaying and interactively manipulating a biological diagram, based upon the entities and interactions represented in said local format.

Claim 21 (Canceled)

Claim 22 (Canceled)

23. (Original) The tool of claim 20, wherein said means for populating includes means for assigning directionality of interactions.

24. (Previously Presented) The tool of claim 20, further comprising a palette for containing entities and interactions selected by a user from lists displayed by said list-based text editor, wherein said entities and interactions in said palette are draggable to said canvas to populate a diagrammatic rendering.

25. (Original) The tool of claim 20, wherein, upon populating a diagrammatic rendering, assignments of roles played by entities populating said diagrammatic rendering are automatically assigned in a list displayed by said list-based text editor.

26. (Original) The tool of claim 20, further comprising means for adding elements to a diagrammatic rendering on said canvas by freehand sketching by the user.

27. (Original) The tool of claim 26, wherein each said entity and interaction displayed on said canvas and listed in said list-based text editor points back to a location of the portion of the textual document where it was identified.

28. (Original) The tool of claim 20, wherein said diagrammatic renderings are populated by selecting at least one entity or interaction from said list-based text editor and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

29. (Original) The tool of claim 20, wherein said diagrammatic renderings are populated by selecting at least one entity or interaction from said text in said text viewer

and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

30. (Currently Amended) A tool for building biological networks of interactions from text, said tool comprising:

a text viewer into which at least a portion of a textual document is importable and viewable, said text viewer including a display on which said at least a portion of the text document is viewable;

means for text mining the at least a portion of a textual document having been imported into the text viewer to extract nouns and verbs therefrom;

a list-based text editor that lists nouns and verbs extracted by said means for text mining as entities and interactions;

means for assigning directionality to the listed interactions; and

means for selecting interactions and associated entities in the list-based editor, merging common entities and displaying a resulting biological network of the interactions in a window of said text view or in a separate network viewer; and

means for interactively manipulating the biological network.

31. (Original) The tool of claim 30, further comprising means for representing said entities and interactions in a local format.

32. (Currently Amended) A tool for comparing extracted biological knowledge extracted from text, against an existing biological diagram, said tool comprising:

a text viewer into which at least a portion of a textual document is importable and viewable, said text viewer including a display on which said at least a portion of the text document is viewable;

means for text mining the at least a portion of a textual document having been imported into the text viewer to extract nouns and verbs therefrom;

a list-based text editor that lists nouns and verbs extracted by said means for text mining as entities and interactions;

a diagram viewer and means for importing at least a portion of an existing biological diagram into said diagram viewer;

means for overlaying the identified entities and interactions on said at least a portion of an existing biological diagram that is displayed in said diagram viewer;

and means for visually distinguishing the overlaid entities and interactions from a remainder of the displayed biological diagram; and

means for interactively manipulating the biological diagram.

33. (Original) The tool of claim 32, further comprising means for representing said entities and interactions in a local format.

34. (Original) The tool of claim 32, wherein each said entity and interaction overlaid points back to a location of the portion of the textual document where it was identified.

35. (Original) The tool of claim 32, further comprising means for assigning directionality to the listed interactions; means for selecting interactions and associated entities in the list-based editor and populating diagrammatic renderings representing said selected interactions and associated entities, wherein said populated diagrammatic renderings are overlaid on the at least a portion of an existing biological diagram displayed in said diagram viewer.

36. (Original) The tool of claim 35, further comprising means for converting the at least a portion of an existing biological diagram to a local format, and based on values contained in the local format, comparing said diagrammatic renderings with corresponding parts of the existing biological diagram.



37. (Original) The tool of claim 32, further comprising means for automatically searching databases of existing biological diagrams that contain a user-specified set of interactions and returning those existing biological diagrams that contain the user-specified set of interactions to the user for display in said diagram viewer for use in overlaying and comparing the identified entities and interactions therewith.

38. (Currently Amended) A method of providing interactive capabilities for user involvement in extracting and disambiguating biological information in text, said method comprising the steps of :

importing at least a portion of a textual document into a text viewer, said text viewer including a display on which said at least a portion of the text document is viewable;

text mining the at least a portion of a textual document to extract nouns and verbs therefrom and identify the nouns and verbs as biological entities and interactions;

listing the identified entities and interactions in a list-based text editor; and  
assigning directionality to the listed interactions by associating listed entities as effectors or affecteds with respect to the interactions;

converting at least a portion of a biological diagram to local format objects representing entities and interactions displayed in the biological diagram;

inputting at least a portion of said local format objects into a user context; and,  
performing said text mining based upon the contents of the user context.

39. (Original) The method of claim 38, further comprising representing said entities and interactions in a local format.

40. (Original) The method of claim 38, further comprising providing a user context, wherein said user context comprises data upon which said text mining is based.

41. (Original) The method of claim 40, further comprising managing said user context to edit the contents thereof or to create a new user context.

42. (Original) The method of claim 41, wherein said managing comprises selecting at least one entity or interaction and adding the selection to the user context.

43. (Original) The method of claim 41, wherein said managing comprises directly inputting at least one entity or interaction to the user context by a user, or editing existing data, by the user, in the user context.

44. (Original) The method of claim 41, wherein said managing comprises selecting at least one local format representation of an entity or interaction, and entering said at least one local format representation into the user context.

45. (Original) The method of claim 38, further comprising managing aliases of entities and interactions, to equate multiple names for the same entity or interaction, so that said text mining, listing and assigning directionality steps are carried out with respect to aliases of entities and interactions contained in the user context, as well as the actual names contained in the user context.

46. (Original) The method of claim 45, further comprising resolving errors in alias management.

47. (Original) The method of claim 46, wherein said error resolution is carried out interactively by a user.

48. (Original) The method of claim 39, further comprising at least one of the steps selected from the group consisting of:

generating a biological diagram based on said entities and interactions represented in said local format;

displaying a biological diagram based on said entities and interactions represented in said local format; and

interactively manipulating a biological diagram based on said entities and interactions represented in said local format.

49. (Canceled)

50. (Original) The method of claim 38, further comprising linking each listed entity and interaction with a location in the textual document from which each listed entity and interaction was identified, respectively, using a local format.

51. (Original) The method of claim 38, further comprising the steps of:  
providing a canvas area for diagrammatically representing said entities and interactions;  
populating at least one diagrammatic rendering on the canvas with one or more of said entities and interactions identified by said means for text mining.

52. (Original) The method of claim 51, wherein upon said populating at least one diagrammatic rendering, assignments of roles played by said entities populating said at least one diagrammatic rendering are automatically assigned in a list displayed by said list-based text editor.

53. (Original) The method of claim 51, further comprising adding elements to a diagrammatic rendering on said canvas by freehand sketching by a user.

54. (Original) The method of claim 51, wherein said diagrammatic renderings are populated by selecting at least one entity or interaction from said list-based text editor and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

55. (Original). The method of claim 51, wherein said diagrammatic renderings are populated by selecting at least one entity or interaction from said text in said text viewer and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

56. (Original) The method of claim 38, further comprising:  
performing a text search to identify a plurality of textual documents;  
importing all or a subset of the plurality of documents into the text viewer; and  
analyzing the textual documents in batch mode to identify interactions and entities to be listed in the list-based editor.

57. (Original) The method of claim 38, further comprising:  
identifying aliases of at least one entity or interaction listed; and  
performing operations on all aliases of the at least one entity or interaction simultaneously with performance of those operations on the at least one entity or interaction.

58. (Previously Presented) A method comprising forwarding a result obtained from the method of claim 38 to a remote location, wherein said result comprises at least one of a list created by said listing the identified entities and interactions in a list-based text editor, and a listed interaction having had directionality assigned thereto by said step of assigning directionality.

59. (Previously Presented) A method comprising transmitting data representing a result obtained from the method of claim 38 to a remote location, wherein said result comprises at least one of a list created by said listing the identified entities and interactions in a list-based text editor, and a listed interaction having had directionality assigned thereto by said step of assigning directionality.

60. (Previously Presented) A method comprising receiving a result obtained from a method of claim 38 from a remote location, wherein said result comprises at least one of a list created by said listing the identified entities and interactions in a list-based text editor, and a listed interaction having had directionality assigned thereto by said step of assigning directionality.

61. (Currently Amended) A method of providing interactive capabilities for user involvement in extracting and disambiguating biological information in text to be used in generating a biological diagram, said method comprising the steps of :

importing at least a portion of a textual document into a text viewer, said text viewer including a display on which said at least a portion of the text document is viewable;

text mining the at least a portion of a textual document to extract nouns and verbs therefrom and identify the extracted nouns and verbs as biological entities and interactions;

listing the identified entities and interactions in a list-based text editor;

representing the identified entities and interactions in a local format;

providing a canvas area for diagrammatically representing entities and interactions having been identified by said text mining; ~~and~~

populating a diagrammatic rendering on the canvas with one or more of said entities and interactions identified by said means for text mining, including indicating directionality of at least one interaction represented by the diagrammatic rendering; wherein, upon populating the diagrammatic rendering, assignments of roles played by entities populating said diagrammatic rendering are automatically assigned in a list displayed by said list-based text editor; and

further performing at least one of the steps selected from the group consisting of:

generating a biological diagram based on said entities and interactions represented in said local format;

displaying a biological diagram based on said entities and interactions represented in said local format; and

interactively manipulating a biological diagram based on said entities and interactions represented in said local format.

62. (Original) The method of claim 61, wherein each said entity and interaction displayed on said canvas and listed in said list-based text editor is automatically linked with a location of each portion of the textual document where it was identified, using a local format.

63. (Currently Amended) A method for building biological networks of interactions from text, said method comprising the steps of:

importing at least a portion of a textual document into a text viewer, said text viewer including a display on which said at least a portion of the text document is viewable;

text mining the at least a portion of a textual document having been imported into the text viewer to extract nouns and verbs therefrom;

listing the extracted nouns and verbs as entities and interactions;

assigning directionality to the listed interactions; ~~and~~

selecting interactions and associated entities and displaying a resulting network of the interactions and entities;

representing said entities and interactions in a local format;

converting the at least a portion of an existing biological diagram to a local format; and

based on values contained in the local format describing the existing biological diagram, comparing the selected entities and interactions with corresponding parts of the existing biological diagram.

64. (Original) The method of claim 63, wherein said selecting and displaying include merging common entities to form a network of interactions and entities.

65. (Canceled)

66. (Canceled)

67. (Original) The method of claim 63, further comprising the steps of:  
automatically searching databases of existing biological diagrams that contain a user-specified set of interactions; and  
returning existing biological diagrams that contain the user-specified set of interactions to the user for use in said overlaying the identified entities and interactions on at least a portion of an existing biological diagram.

68. (Currently Amended) A computer readable medium carrying one or more sequences of instructions for user involvement in extracting and disambiguating biological information in text to be used in generating a biological diagram, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

importing at least a portion of a textual document into a text viewer, said text viewer including a display on which said at least a portion of the text document is viewable;

text mining the at least a portion of a textual document to extract nouns and verbs therefrom and identify the extracted nouns and verbs as biological entities and interactions;

listing the identified entities and interactions in a list-based text editor; and  
assigning directionality to the listed interactions by associating listed entities as affecters or affecteds with respect to the interactions;

converting the extracted nouns and verbs into a local format representation as the entities and interactions; and

generating, displaying and interactively manipulating a biological diagram, based upon the entities and interactions represented in said local format.

69. (Currently Amended) The computer readable medium of claim 68, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the additional step of linking each listed entity and interaction with a location in the textual document from which each listed entity and interaction was identified, respectively, using the a local format.

70. (Original) The computer readable medium of claim 68, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the additional steps of:

providing a canvas area for diagrammatically representing said identified entities and interactions; and

populating at least one of the diagrammatic renderings on the canvas with one or more of said entities and interactions identified by said means for text mining.

71. (Original) The computer readable medium of claim 70, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the additional steps of adding elements to a diagrammatic rendering on the canvas or creating a diagrammatic rendering on the canvas by freehand sketching.

72. (Original) The computer readable medium of claim 70, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the step of populating said diagrammatic renderings, upon selection of at least one entity or interaction from said list-based text editor and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

73. (Original) The computer readable medium of claim 70, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the step of populating said diagrammatic renderings, upon



selection of at least one entity or interaction from said text in said text viewer and dragging to a desired location in a diagrammatic rendering displayed on the canvas.

74. (Original) The computer readable medium of claim 68, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the additional steps of:

performing a text search to identify a plurality of textual documents;  
importing all or a subset of the plurality of documents into the text viewer; and  
analyzing the textual documents in batch mode to identify interactions and entities to be listed in the list-based editor.

75. (Original) The computer readable medium of claim 68, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the additional steps of:

identifying aliases of at least one entity or interaction listed; and  
performing operations on all aliases of the at least one entity or interaction simultaneously with performance of those operations on the at least one entity or interaction.

### ***Reason for Allowance***

6. The following is an examiner's statement of reasons for allowance:

The prior art made of records does not teach or fairly suggest the combination of elements, as recited in independent claims 1, 20, 30, 32, 38, 61, 63 and 68. More specifically, the prior art of records does not specifically suggest wherein as argued by Applicant's amendment importing a portion of a textual document onto a display; mining the document for nouns and verbs; extracting interactions and entities of the list of nouns and verbs; assigning directionality to the interactions; converting them into local

format and further generating, displaying and interactively manipulating a biological diagram based upon the entities and interactions in the local format.

The dependent claims, being definite, further limiting and fully enabled by the specification are also allowed.

The significant amendments made overcome the prior Double Patenting rejection.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Contact Information**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Navneet K. Ahluwalia whose telephone number is 571-272-5636. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam T. Hosain can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Navneet*

Navneet K. Ahluwalia  
Examiner  
Art Unit 2166

  
MOHAMMAD ALI  
PRIMARY EXAMINER

Dated: 09/27/2006